# Sickle Hemoglobin

S

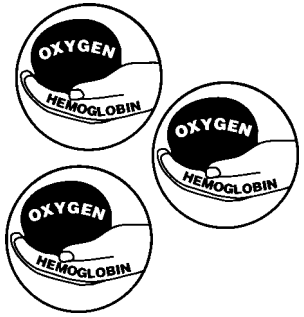
Cover

**To understand S hemoglobin, it is helpful to understand a little more about our blood. S hemoglobin affects a part of the blood called hemoglobin.**

## Hemoglobin

One role of the blood is to take the oxygen from the air in the lungs and bring it to all parts of the body. The part of the blood that does this job is the red blood cell.

**Hemoglobin** is the part of the red blood cell that carries the oxygen.

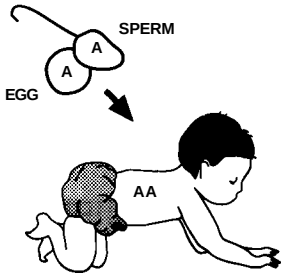



HEMOGLOBIN IN RED BLOOD CELLS CARRIES THE OXYGEN.

The way hemoglobin is made in the body depends on the **genes** a child inherits from both parents. A gene carries instructions, like what color the child's skin or eyes will be. Different genes carry different instructions.

We can inherit genes which cause unusual types of hemoglobin to be made, or genes which interfere with the amount of hemoglobin made.

The usual adult hemoglobin is called hemoglobin A. The less common types of hemoglobin are named by letters, such as hemoglobin S (sickle hemoglobin), hemoglobin C, or sometimes by names such as hemoglobin Bart's.



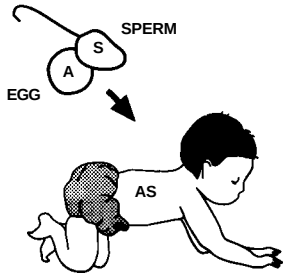

GENES IN THE SPERM OF THE FATHER AND THE EGG OF THE MOTHER DETERMINE THE TYPE OF HEMOGLOBIN.

## What is Sickle Hemoglobin?

Sickle hemoglobin is a type of hemoglobin that is common in people of African ancestry. It is also found in Mexican Americans, and white Americans, especially those whose families originally came from Turkey, Italy, Greece, Spain and other Latin or Mediterranean countries.

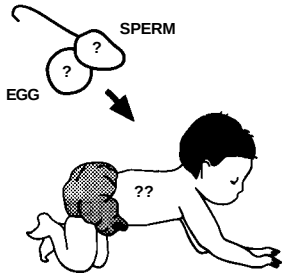
## Sickle Cell Trait

Each child inherits one gene from the mother and one from the father that instructs the body how to make hemoglobin. An individual who inherits one gene for the usual hemoglobin A and one gene for sickle hemoglobin, is said to have sickle cell trait (also called hemoglobin S trait).




SICKLE CELL TRAIT IS **NOT** A DISEASE AND DOES NOT AFFECT A PERSON'S MENTAL OR PHYSICAL HEALTH.

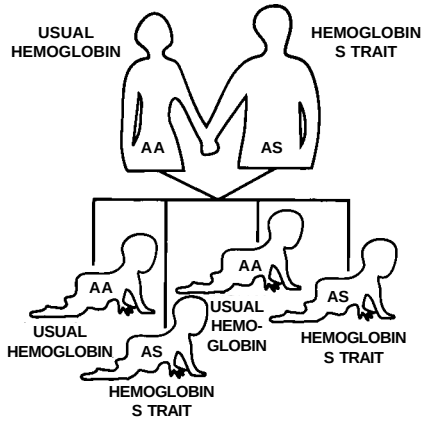
It is important to know that having sickle cell trait means that you only have one gene for sickle hemoglobin and therefore are only a carrier of the disease. People with sickle cell trait generally have no health problems related to having only one sickle cell gene. The trait will not develop into sickle cell disease, which is a serious illness described later in this pamphlet. People with sickle cell trait usually wouldn't even know they have S trait unless they are tested. The importance of knowing about sickle cell trait is for future children in the family and other family members.




TESTING MOM AND DAD CAN ANSWER QUESTIONS ABOUT THE CHANCE OF SICKLE CELL IN FUTURE BABIES.

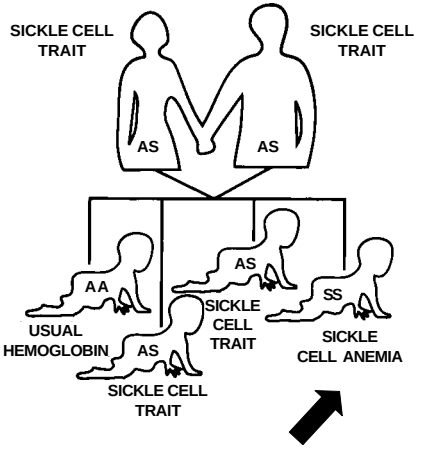


People with sickle cell trait can pass the sickle cell gene to their children. If only one parent has hemoglobin S trait, there is a 50/50 chance that the children might inherit the trait. There is also a 50/50 chance that the children will not inherit the gene for S hemoglobin. The chances are the same with each pregnancy.

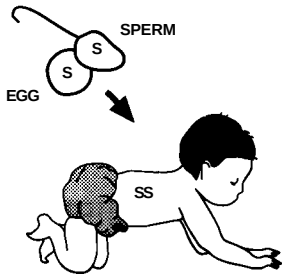



## Sickle Cell Anemia (Hemoglobin SS)

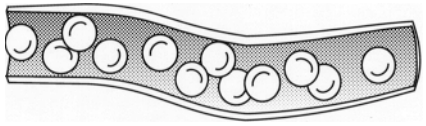
When both parents have sickle cell trait, there is a one-in-four (25%) chance that their child will have sickle cell anemia. They might also have a child with sickle cell trait (1-in-2, or 50% chance), or a child with only the usual type of hemoglobin (1-in-4, or 25% chance). The chances are the same with each pregnancy.



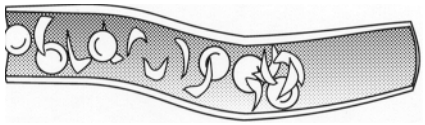
For the child who inherits the hemoglobin S gene from **both** parents, only sickle hemoglobin is made in the body.




When a person has sickle cell anemia the red blood cells sometimes change from a very flexible round shape into a rigid crescent or "sickle" shape. Sickle-shaped red blood cells can prevent the usual flow of blood and oxygen to body organs.



ROUND RED BLOOD CELLS FLOW THROUGH SMALL BLOOD VESSELS.



SICKLE-SHAPED RED BLOOD CELLS CAN BLOCK THE FLOW OF BLOOD IN SMALL BLOOD VESSELS.

## Symptoms of Sickle Cell Anemia

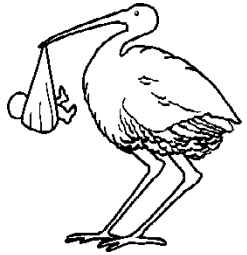
Symptoms of sickle cell anemia include a higher risk for certain infections to occur and can also include painful episodes and an enlarged spleen. Sickle cell anemia does not affect intelligence. There is no cure for sickle cell anemia, but there are treatments for the problems caused by the disease. It is very important that people with sickle cell anemia receive regular medical care.

## Other Types Of Sickle Cell Disease

Sickle cell anemia is the most common type of sickle cell disease. However, there are some other types that are caused when a child inherits one sickle cell gene and one gene for another less common hemoglobin type such as hemoglobin C or D. Sickle cell disease can also be caused by a condition called sickle beta thalassemia. This occurs when a child inherits one S (sickle cell) gene and one defective gene that can't make enough of the usual type of hemoglobin (A). These other types of sickle cell disease can also cause many health problems beginning in infancy.



**It can be helpful for people to know about their hemoglobin type so they can make informed decisions regarding family planning. Testing and counseling can be arranged, and questions answered about sickle hemoglobin or any other kind of inherited hemoglobin condition by contacting:**



Newborn Screening Program
1610 NE 150th Street
Shoreline, WA 98155
(206) 361-2902

Washington State Department of Health

Revised 02/14/2000